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A study on fish marketing system in Viraval, Navsari, Gujarat

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Abstract

Market surveys are crucial for businesses and organizations to make informed strategic decisions, develop new products, and evaluate their competitive standing. These surveys help in understanding consumer preferences, tastes, and market trends. This study aimed to evaluate the effectiveness of the 'Viraval Fish Market' in Gujarat's Navsari district, India, as a marketing system for fish harvested from Tapi's Ukai Dam. A survey was conducted to collect data, revealing a wide variety of freshwater fish commonly sold in the market, such as Roi, Marghi, Jipta, Tiger, Levta, Ravas, Boi, Bangda, Godhra (Chor Bumla), and Halvo. The market involves various participants, including distributors, wholesalers, retailers, and fishermen. Fish prices are influenced by factors like the size, availability, and quality of the species, with labor and transportation costs playing a significant role in price determination. The marketing system also supports employment generation, involving both men and women. However, the market faces challenges to sustainable growth, including limited land availability, resource constraints, and poor infrastructure.

Keywords: Fish market, 'Viraval Fish Market', Navsari, Gujarat

Introduction

The fisheries sector plays a crucial role in socio-economic development, providing nutritional support, creating employment opportunities, reducing poverty, and contributing to the country's foreign exchange earnings. Aquaculture, or fish farming, has become an essential industry that greatly contributes to global food security and economic development. In many areas, small-scale fish farmers are vital in providing local markets with fresh, nutritious seafood. According to Kotler (1997) [6], a market consists of both actual and potential buyers for a specific product. In this study, a market is defined as any system that enables the exchange of goods, services, and information between buyers and sellers. However, these farmers often encounter several challenges, such as restricted market access, insufficient infrastructure, and price volatility.

Devadasan highlighted that post-harvest resource loss is a significant issue in the fisheries sector and stressed the importance of efficient marketing channels to reduce these losses. Kumar conducted a survey on domestic fish marketing trends in India, focusing on changes in structure, conduct, performance, and policies. Key challenges in fish marketing include the perishable nature and bulkiness of the product, inadequate transportation facilities, significant variation in size and weight across species, high costs of storage and transportation, low demand elasticity, and a wide price gap.

Market surveys play a vital role in the fisheries sector by

providing valuable insights into evolving demands and challenges. They assist stakeholders—such as fishers, producers, traders, and policymakers—in collecting data on consumer preferences, market trends, pricing, and supply chain dynamics. These surveys help identify new opportunities, enhance production techniques, and align products with market requirements. Moreover, they reveal market gaps, promote sustainable practices, and support economic stability. For instance, surveys can guide fishers in making informed choices about which species to cultivate based on demand. The FAO emphasizes that market surveys are essential for shaping policies that enhance food security and support communities reliant on fisheries, enabling the sector to adapt and grow sustainably.

Materials and Methods

Fish marketing through Viraval offers an efficient distribution system. The process starts with fishermen, followed by salespeople, workers, wholesalers, distributors, retailers, and ultimately customers. Each group in this chain is surveyed. The fish landing site in Viraval, near the Purna River, is where distributors are interviewed. Interviews are also conducted with other participants in the Viraval fish market process. Fish vendors, or fish sellers, are individuals involved in selling fish. The two main categories of sellers are fish hawkers small-scale vendors who buy fish from distributors and business owners, some of whom are women. There is a distinction between fish hawkers and

business owners. Salespeople, typically large, experienced traders, buy fresh fish from fishermen and sell it to wholesalers and retailers in the wholesale market. Data collection took place on a monthly basis from the market, using a questionnaire tailored for the study. The questions were kept straightforward, recognizing that many fish traders have limited education and may not possess technical knowledge. To facilitate easy responses, the questions were phrased informally, ensuring they could be answered by traders without requiring specific scientific understanding. The study was carried out over the period from 16th April 2024 to 14th May 2024.

Study area

The present study focused on the fish market in Viraval town, located in the Navsari district. This market is one of the most popular and frequently visited fish markets in the area. Data for the study was gathered over a one-month period in April-May 2024.



Fig 1: Map locate viraval fish market

Observation



The fish market is equipped with electricity and an ice plant, but it lacks cold rooms and ice storage for fish preservation. Several essential amenities are also missing, including tap water, common dry storage, off-loading tables or slabs, cleaning tables, and cement selling stalls or tables. Additionally, there are no traditional ovens or drying racks for fish processing. While temporary shelter is provided, there are no permanent buildings or stalls. Toilets and latrines are available for sanitation. Due to the absence of proper cold storage facilities, most fishermen try to sell their entire catch on the same day.

Women involvement

Women play a crucial role in various aspects of the fisheries sector, including aquaculture, fishing, and capture. In the Viraval region, they are primarily involved in selling fish and shrimp at local markets. This study highlights the significant role women have in fish sales at the Viraval fish market, emphasizing their vital contribution to its functioning.

Availability of Fish and the Use of Nets

Fish are captured using different methods, such as trawl nets and gill nets, with the supply varying throughout the year. The highest availability occurs in June, July, and August, when supply levels are at their peak. A moderate supply is seen in January, February, March, and November, with a slight rise in October. However, the supply is lowest in April, May, and September, indicating a seasonal decline in availability.

Data Processing and Analysis

To reduce calculating errors, data gathered in native units were converted to standard units, entered into a table, and then uploaded to a computer. All computations were performed using Microsoft Excel, version.

Identification of fishes

In a fish market, fish are typically identified based on their appearance and key characteristics, such as body shape, size, color, and the texture of their scales. Sellers often rely on local names and visual features like fin shape, gill structure, and the presence of distinctive markings or patterns. Freshness is also an important factor, with fresh fish having clear, bright eyes, firm flesh, and a clean, ocean-fresh smell. Additionally, some fish may be identified by their distinctive fins, tails, or the nature of their spines.

Results and Discussion

This study was conducted to evaluate the current state of fish markets in different regions, focusing on factors such as market infrastructure, available facilities, cold storage, cleanliness, the most commonly sold fish species, pricing structure, the role of women, and the overall marketing system. The results of the study are outlined below.

The fish market in Viraval town is located at varying distances from key landmarks in the area. Eru Chhar Rasta is 8 km away, Gandhi Fatak is 9 km from the market, the station is 6 km distant, and Vitthal Mandir is 4 km away. Madhumati Colony is the closest, situated only 2 km from the market. The fish market sources its supply from several locations, each with specific distances and access routes.

Ukai Dam is 120 km away, connected by an unpaved road. Dholai Bandar is 20 km from the market, also accessible via an unpaved road. Additionally, the Tapi and Ambika rivers,

located 40 km away, serve as another source, with the same unpaved road connection.

Table 1: fish fauna of Navsari fish market

Sr No.	Local name	Common Name	Scientific name	Order
1	Roi	Rohu	<i>Labeo rohita</i>	Cypriniformes
2	Marghi	Tilapia	<i>Oreochromis</i>	Cichliformes
3	Jipta	Flat fish	<i>Psettodes erumei</i>	Pleuronectiformes
4	Tiger	Monodon	<i>Penaeus monodon</i>	Decapoda
5	Levta	Mudskipper	<i>Periophthalmus barbarus</i>	Gobiiformes
6	Ravas	Indian salmon	<i>Eleutheronema tetradactylum</i>	Carangiformes
7	Boi	Mullet	<i>Mugil cephalus</i>	Mugiliformes
8	Bangda	Mackrel	<i>Scomber scombrus</i>	Scombriformes
9	Godhra(Chor bumla)	Lizardfish	<i>Harpadon nehereus</i>	Aulopiformes
10	Halvo	Chinese Pomfret	<i>Pampus chinensis</i>	Scombriformes
11	Pankaj	Pangasius	<i>Pangasianodon hypophthalmus</i>	Siluriformes
12	Dhoma	Crocker	<i>Otolithes cuvieri</i>	Acanthuriformes
13	Mendali	Anchovy	<i>Coilia dussumieri</i>	Clupeiformes
14	Pambhida	Sardine	<i>Sardinella longiceps</i>	Clupeiformes
15	Palva	Hilsa	<i>Tenualosa ilisha</i>	Clupeiformes
16	Modar	Herring	<i>Clupea harengus</i>	Clupeiformes
17	Paplet	Silver pomfret	<i>Pampus argenteus</i>	Scombriformes
18	Baga	Ribbonfish	<i>Trichiurus lepturus</i>	Scombriformes
19	Bumla	Bombay duck	<i>Harpadon nehereus</i>	Aulopiformes
20	Magur	Magur	<i>Clarias batrachus</i>	Siluriformes
21	Jinga	Vannamei	<i>Litopenaeus vannamei</i>	Decapoda
22	Lal machli	Red snapper	<i>Lutjanus campechanus</i>	Acanthuriformes
23	Raja macchi	Snaaper	<i>Lutjanus spp.</i>	Lutjaniformes
24	Catla	catla	<i>Labeo catla</i>	Cypriniformes
25	Balu	Beakfish	<i>Hyporhamphus unifasciatus</i>	Beloniformes
26	Chinese	Paplet	<i>Pampus argenteus</i>	Scombriformes
27	Tira	Crab	<i>Ilyoplax sayajiraoi</i>	Decapoda
28	Koth	Crocker	<i>Protonibea Diacanthus</i>	Eupercaria incertae sedis
29	Kokda	rosenbergii	<i>Macrobrachium rosenbergii</i>	Decapoda
30	Vam	Eel	<i>Anguilla bengalensis</i>	Anguilliformes
31	Narshingha	Squid	<i>Loligo duvaucelii</i>	Myopsida
32	Bangda	Indian mackerel	<i>Rastrelliger kanagaruta</i>	Perciformes

The wholesale fish market offered a wide range of fish varieties. The list of fish, along with their scientific, order,

common, and local names, available in the Viraval fish market is shown in Table 1.

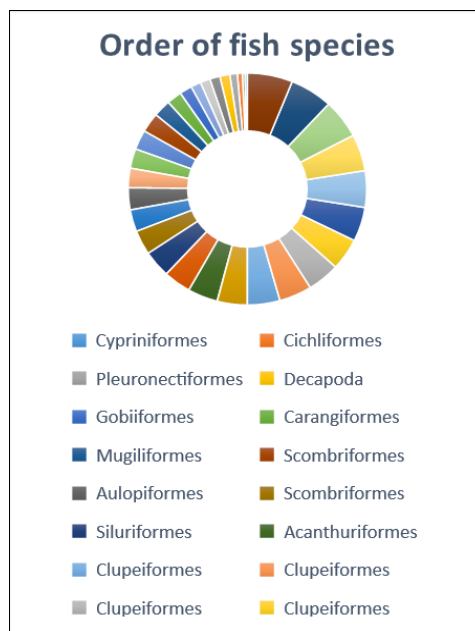


Fig 2: Order of fish species

A total of 28 fish species were identified in this study. The wholesale fish market is largely dominated by two orders, Decapoda and Scombriformes, each accounting for 19.23% of the total fish species available for sale, far surpassing other orders in variety. Clupeiformes follows, representing 15.38% of the market, indicating its strong presence. A group of orders, including Cypriniformes, Aulopiformes, Siluriformes, and Acanthuriformes, each contributes 7.69% to the market share. Additionally, several other orders such

as *Cichliformes*, *Pleuronectiformes*, *Gobiiformes*, *Carangiformes*, *Mugiliformes*, *Lutjaniformes*, *Beloniformes*, *Eupercaria incertae sedis*, *Anguilliformes*, *Myopsida*, and *Perciformes*, each make up 3.85% of the total fish sold. Together, Decapoda and Scombriformes account for over a third of the fish varieties in the market, with numerous other orders making up smaller, yet still noteworthy, portions of the total stock.

Table 2: fish Price Differences in the Fish Market

Common Name	Fishermen (price) Rs.	Distributor (price) Rs.	Retailer (price) Rs.	Market gap (Distribution) Rs.	Market gap (Retail) Rs.
Rohu	130	140	160	10	20
Tilapia	80	100	130	20	30
Flat fish	100	120	135	20	15
Monodon	250	280	300	30	20
Mudskipper	60	100	150	40	50
Indian salmon	640	650	700	10	50
Mullet	120	130	150	10	20
Mackrel	98	110	200	12	90
Lizardfish	100	130	200	30	70
Chinese Pomfret	125	140	200	15	60
Pangasius	120	130	160	10	30
Crocker	90	120	140	30	20
Anchovy	70	100	120	30	20
Sardine	100	130	170	30	40
Hilsa	320	350	400	30	50
Herring	120	155	180	35	25
Silver pomfret	980	1000	1200	20	200
Ribbonfish	110	125	150	15	25
Bombay duck	70	100	130	30	30
Magur	100	110	120	10	10
Vannamei	350	390	450	40	60
Red snapper	130	150	200	20	50
Snaaper	300	320	350	20	30
Catla	140	150	160	10	10
Beakfish	60	70	100	10	30
Paplet	90	100	120	10	20
Crab	250	300	360	50	60
Crocker	300	350	400	50	50
Rosenbergii	420	450	500	30	50
Eel	100	120	160	20	40
Squid	100	130	140	30	10
Indian mackerel	80	90	100	10	10

The table provides a comparison of prices at different stages of the fish supply chain, from fishermen to distributors to retailers, for various fish species. It also highlights the market gap, which refers to the price difference between each level of the chain (distribution and retail). Rohu shows a modest price difference Rs. 10 between fishermen and distributors, and Rs. 20 between distributors and retailers. Tilapia has a larger gap: Rs. 20 between distributors and fishermen, and Rs. 30 at the retail level. Mudskipper demonstrates a significant price increase, with a Rs. 40 difference between fishermen and distributors, and a Rs. 50 markup at the retail stage. Indian Salmon has a minimal difference of Rs. 10 between fishermen and distributors, but the retail markup is Rs. 50. For premium species like Silver Pomfret and Crab, the price differences are quite substantial, with retail markups of Rs. 200 and Rs. 60, respectively. Vannamei and Hilsa also experience notable retail price increases, with markups of Rs. 60 and Rs. 50, respectively.

Common species like Magur and Indian Mackerel show smaller gaps, indicating consistent pricing across the distribution chain, with small differences of Rs. 10 or Rs. 20 at each stage. The market gap (distribution) shows the price difference between the fishermen's and distributor's prices, while the market gap (retail) indicates the price difference between the distributor's and retailer's prices. These patterns reflect how fish species, their popularity, and demand influence price variations across different levels of the supply chain. Some species experience significant price jumps at the retail level, while others maintain a more consistent pricing structure.

Conclusion

The findings from this study provide valuable insights into the dynamics of fish marketing in the Viraval region, with a focus on pricing structures, supply chain operations, and market challenges. The survey reveals that fish prices vary

significantly at different levels of the supply chain, with factors such as species popularity, demand, and market conditions influencing these differences. Premium species like Silver Pomfret and Crab experience substantial price markups, while more common species maintain relatively consistent pricing. The lack of proper cold storage facilities and inadequate infrastructure poses significant challenges, impacting the sustainability of the market. Additionally, the crucial role of women in fish sales and the varying supply of fish throughout the year further highlight the complexity of the market. This study emphasizes the need for improved infrastructure, better pricing strategies, and enhanced market conditions to promote efficiency, economic stability, and sustainable growth in the fisheries sector. The information gathered can guide future policy-making, improve market functioning, and address the key issues faced by stakeholders in the fishery supply chain.

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